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### The influence of Single Area Payments and Less Favoured Area Payments on the Latvian landscape.

**Citation for published version:**

Bell, S, Nikodemus, O, Peneze, Z & Rasa, I 2010, 'The influence of Single Area Payments and Less Favoured Area Payments on the Latvian landscape.', *European Countryside*, vol. 2, pp. 25-41.

**Link:**

[Link to publication record in Edinburgh Research Explorer](#)

**Document Version:**

Publisher's PDF, also known as Version of record

**Published In:**

European Countryside

**Publisher Rights Statement:**

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# THE INFLUENCE OF EUROPEAN UNION SINGLE AREA PAYMENTS AND LESS FAVOURED AREA PAYMENTS ON THE LATVIAN LANDSCAPE

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Received 12 March 2007; Accepted 7 May 2010

**Abstract:** At the end of the 20<sup>th</sup> century, following the collapse of centralised planned economy of the Soviet Union, the disintegration of collective type of agriculture and the restoration of lands to their pre-war owners, Latvia experienced widespread abandonment of agricultural lands and their gradual re-colonisation by woodland. It has been assumed that following the accession by Latvia to the European Union in 2004 and the incorporation of the agricultural system into the Common Agricultural Policy would stop or reverse the process of land abandonment. The conclusion from examining five geographically diverse rural municipalities is that so far the single area payments have had little effect on hilly mosaic type landscape structure, or on the process of land abandonment.

**Key words:** Agricultural land, agri-environment schemes; European Union (EU) single area payment (SAP), landscape structure, land use changes, EU less favoured area payment (LFAP)

**Abstrakts:** EIROPAS SAVIENĪBAS VIENOTO PLATĪBU MAKSĀJUMU UN ATBALSTĀMO REĢIONU MAKSĀJUMU IETEKME UZ LATVIJAS AINAVAS RAKSTU UN STRUKTŪRU. 20. gs beigās ar centralizētās plānošanas sistēmas sabrukumu un kolektīvo saimniecību likvidāciju un zemes privatizāciju, daudzviet Latvijā lauksaimniecības zemes tika atstātas atmatā un tās pakāpeniski aizauga ar krūmiem un kokiem. Domāja, ka Latvijai iestājoties Eiropas Savienībā un ar iesaistīšanos kopējā lauksaimniecības politikā, samazināsies lauksaimniecības zemju pamešana. Minētā procesa apturēšana sevišķi svarīga ir mozaīkveida ainavās paugurainēs, kur atklātās pļavas un ganības ir nozīmīgs kultūrainavas elements un nodrošina tās bioloģisko daudzveidību. Pētījumā Eiropas Savienības atbalsta maksājumu ietekme uz ainavas rakstu un struktūru tika pētīta piecās ģeogrāfiskā un ainavas ziņā atšķirīgās pašvaldībās. Kā indikatori lauksaimniecības politikas ietekmei uz ainavu tika izmantoti vienotie platību maksājumi un atbalstāmo reģionu maksājumi.

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Pētījumu rezultāti parādīja, ka šie maksājumi kopumā ietekmē kultūrainavas saglabāšanu, bet tiem ir relatīva maza ietekme uz mozaīkveida ainavu saglabāšanu paugurainēs un upju ielejās.

**Atslēgas vārdi:** Lauksaimniecības zemes, agro-vides shēmas, Eiropas Savienības vienoto platību maksājumu (VPM), zemes izmantošanas maiņa, atbalstāmo reģionu maksājumi

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## 1. Introduction

Following the collapse of the Soviet Union in 1991 and the restoration of the republic of Latvia, several major changes took place in agriculture. Firstly, there was the disintegration of collective farming which had been practised since the 1950s. Secondly, the land was restored to the previous owners or their descendents. Thirdly, since many of these owners were older people, city residents or even people living in other countries as a result of earlier exile, the proportion of land under active agriculture quickly declined, especially in more marginal areas where soil fertility, farm size, remoteness and poor social conditions prevailed. Significant areas of land became abandoned and, owing to the presence of forest and the absence of grazing animals in the locality, these lands were rapidly colonised by woody species and are gradually transforming into forest. This process is not unique to Latvia, being prevalent in Estonia, parts of Lithuania and the Czech Republic (Mander and Palang 1994, Nikodemus et al. 2005a, Palang et al. 1998, 2000, Penēze et al. 2004, 2005, Szakacs 1993). Nor is land abandonment confined to Eastern Europe, being a significant issue in Western European countries such as Portugal and in the mountains of France and Spain (Baldock et al. 1996, Mazzoleni et al. 2004), although the dynamics are slightly different.

Agricultural lands, including land currently in cultivation and abandoned areas (see below), which at present occupy some 24.5 million ha or 38.1% of the land area of Latvia, are supplemented by the other major landscape element – forest (State Land Service 2006). The pattern of agricultural land varies considerably, for example, being in places large-scale and open in character while in others part of a small-scale complex mosaic together with forest. In 1995 abandoned land already covered 279,000 ha, but by 2002 the figure had almost doubled to 524,000 ha. Since 1999 abandonment and overgrowth of agricultural land has increased by 1.81% per year (Latvian Environmental Agency 2004). A report by the United Nations (Shvangiradze et al. 2000) estimated that by 2020 there will be 600,000 ha of abandoned land in Latvia. This figure looks likely to be reached.

In Latvia, recent land use practices have been determined by a range of legal, social and economic factors such as the legal status of the land owner, ruling traditions and social and economic marginalisation, which is closely linked with the socio-economic situation and geographical context of particular locations (Bell et al. 2007, Bell and Montarzino 2007, Nikodemus et al. 2005b). For example, migration of young people to the cities and to work in other countries, a process that started in the late 1990s but which has grown significantly following accession to the European Union (EU) in 2004 (Bell and Montarzino 2007), has also played a major role more recently. However, fertility of the soil is an important factor at the state level but at the local level it has not played a decisive role (Nikodemus et al. 2005a).

Furthermore the pattern of abandonment is not distributed equally around the country. In the hillier regions with poorer sandy soils, smaller land parcels and a mosaic landscape pattern, the scale of abandonment is greater, while in the large-scale, fertile, low-lying plains there is much less (Boruks 2003). This is partly due to economic factors and inherent fertility, attractiveness for commercial agriculture and ready access to markets but also in part due to historical social factors such as farm size, which was always smaller in the poorer areas, especially in the east of the country in the region known as Latgale (Zariņa 2010). When the land was restored to its owners it was inevitable that many returned to those areas where the farms had originally been small and less economic (Boruks 2003). It is from these areas that many migrant workers originate.

In this paper the term *landscape* is used in two ways. Firstly, there is the geographical concept where landscape is the land as perceived, modified and used by people and so is a cultural

construct (Council of Europe 2000, Duncan 2000). In Latvia the countryside as a cultural landscape is highly valued by both rural and urban residents and forms a part of the sense of national identity. There are important, well recognised elements to this including detached farmsteads, meadows, ponds, orchards, lines of trees and storks' nests (Bell et al. 2008). The second concept is an ecological one, where the landscape is a mosaic of different elements such as patches and corridors (Forman and Godron 1984). The biodiversity value of many areas with the complex mosaic landscape is high and Latvia recognises this by implementing the various EU directives such as the habitat directive. Throughout Europe landscape protection and maintenance is in part delivered through the range of different national agri-environment programmes funded through the Common Agricultural Policy (CAP) or by national governments. At present there is no well-defined local policy for conserving rural cultural landscapes in Latvia that compares with these schemes.

Many agri-environment schemes have also been set up with the aim of improving biodiversity, though some evaluations of those in several European countries suggests that they have had mixed results (Klein and Sutherland 2003). In Latvia many species of birds and mammals that are endangered or rare in other parts of Europe are relatively common; the number of individuals has grown since the disintegration of the collective farming system followed by the low levels of fertiliser and pesticide application onto the mosaic landscape structure. The Latvian Environment Data Centre (2000) identified the abandonment and overgrowing of natural meadows and semi-natural grasslands due to the cessation of traditional management by cattle grazing and mowing as a major pressure likely to affect the populations of many mainly plant and bird species (including threatened species such as Ruff (*Philomachus pugnax*), Baltic dunlin (*Calidris alpina schinzii*) and black-tailed godwit (*Limosa limosa*)) inhabiting meadows.

## 2. EU agricultural support measures

On accession to the EU in 2004, through the provisions of the Accession Treaty, Latvian farmers had for the first time the chance to apply for EU direct support payments under the single payment scheme. The single payment comprises aid allocated to farmers irrespective of their level of production. In this the programme was in line with the rest of Europe. However, the amounts available were limited: Latvian farmers were at first able to receive only 55% of the payments that farmers in the EU-15 Member States (the 15 member states before the enlargement to 25 states in 2004) received. Each year the level of the payments gradually increases in the new EU Member States so that by 2013 it will achieve 100% of the level of the EU-15 states (Agriculture and Rural Area of Latvia 2005).

Under the single payment scheme farmers in Latvia can receive the following:

1. Single area payment (SAP). SAP can be received for agricultural land that is maintained in good agricultural and environmental condition irrespective of whether it is used for agricultural production or not. SAP is primarily an income support measure but, being part of the so-called agri-environment system of support it is also aimed at maintaining existing open landscapes. The method of assessing if land qualifies for SAP is to take an area under a single ownership (a farm unit) which may include buildings, forest, wetland, ponds and abandoned fields as well as cultivated arable areas and mown or grazed grassland and to calculate the allowable area. The SAP only applies to the cultivated, mown or grazed areas, not to the rest, because either they are not in agriculture (buildings, forest, wetland or ponds) or are not maintained in a good agricultural or environmental condition (abandoned fields). A farm is normally divided into one or more field blocks, which are either included or excluded from the SAP according to their state of agricultural use and condition. The SAP is a fixed rate per ha, at an amount set each year, regardless of land quality. Every eligible landowner is entitled to receive SAP; it is not discretionary. All land is recorded in a digital database held by the Rural Support Service and samples of land are inspected annually to see if they are in the state as claimed by the applicant.
2. Less favoured areas payment (LFAP). LFAP can be received by a farmer to compensate for the additional expenses incurred by agricultural production and any foregone income,

relating to conditions that do not foster agricultural production, such as in upland regions where soils are poor and terrain more difficult for cultivation, in Natura 2000 areas and in marginal areas (remote locations such as the Latgale Region in the east of the country). Until 2006 LFAP could be received by all applicants from the qualifying areas who actively managed their land. Since 2007, LFAP can be only received by farmers who grow products other than grass, for example who have cattle or grow crops and other agricultural products. Just growing grass which is cut for hay to be used by another farmer does not qualify. LFAP is paid on top of the SAP in those areas which qualify.

There are two further types of payment possible but neither is considered in the study reported here: they are mentioned for completeness sake.

3. Financial support for areas with environmental restrictions. This is a payment for farmers, whose agricultural land is situated on specially protected nature areas, in order to support them for restrictions placed on business activity on their land.
4. Agri-environment payments for the development of organic farming, maintenance of biological diversity in grasslands, establishment of buffer zones along watercourses and water bodies and for preventing land erosion.

In addition to the EU payments there are a series of national subsidies paid at specific rates for different crop types – potatoes, grain, fodder crops etc. These can be used by farmers growing such crops on top of the SAP.

The level of uptake of the different EU support programmes for agricultural land farming in Latvia since their availability is quite significant (table 1).

For Latvian farmers the payments represent a stable income, which is not influenced by market fluctuations. In 2004 54.8% and in 2005 60.8% of agricultural land was cultivated or cropped with the support of EU payments. However, the question arises: to what extent are these payments having a positive effect on the landscape pattern and structure which, as noted above, is a key aspect of the cultural and ecological (and therefore environmental) quality? Is the level of land abandonment increasing, decreasing or staying the same? Are the payments going to those farmers who manage the most valuable landscapes? If not, what obstacles prevent the benefits from being achieved?

Payment programme	Payment (€per ha)	Area (thousand ha)	Area (% of agricultural land)
Single area payments	26.44	1496	60.8
Less favoured areas payments	33.0 – 64.0	1042	42.4
Support for areas with environmental restrictions	26.0 – 33.0	73	3.0
Agro-environment payments	82.0 – 139.0	102	4.1

Tab 1. Usage of the European Union financial support programmes for agricultural land farming in Latvia in 2005 (Rural Support Service Report 2005 (2006)).

In order to answer these questions at the local level, the research conducted here used information about farmers' applications for SAP in five sample areas as an indicator, because the payment is accessible to all farmers using agricultural land in Latvia. LFAP was used as indicator characterising the use of land for agricultural production in three of the study areas, which are also eligible for LFAP. It looks at the distribution of the payments to different farm types in representative regions and different landscapes and examines the preliminary effect on the main dynamic variable that can easily be measured, that of the rates of land abandonment.

### 3. Study areas

The research was concentrated on a sample of five geographically diverse rural municipalities (in Latvian called *pagasts* or *novads*, the difference being that a novads is a new form of administrative unit made by amalgamation of two or more pagasts) with different landscape patterns and structures (figure 1).

Rural municipalities	Area (km <sup>2</sup> )	Total agricultural land (%)	Arable land within agricultural land (%)	Unused agricultural land (%) in 2005	Meliorated agricultural land (%)	Number of farms	Average area of a farm (ha)
Vecsaules	163.9	63.2	80.6	2.0	69.6	180	32.6
Nautrēnu	156.9	67.0	64.8	11.4	63.7	43	35.6
Zaubes	152.8	34.4	30.1	43.9	43.6	136	19.1
Krimuldas	176.3	43.1	78.6	15.1	64.7	100	29.0
Siguldas	204.5	37.6	52.1	27.8	65.6	225	33.4

Tab 2. General characteristic of the investigated territories' land use and farms (Encyclopaedia of Latvian Pagasts 2001, 2002, Statistical Bureau of Latvia 2005).

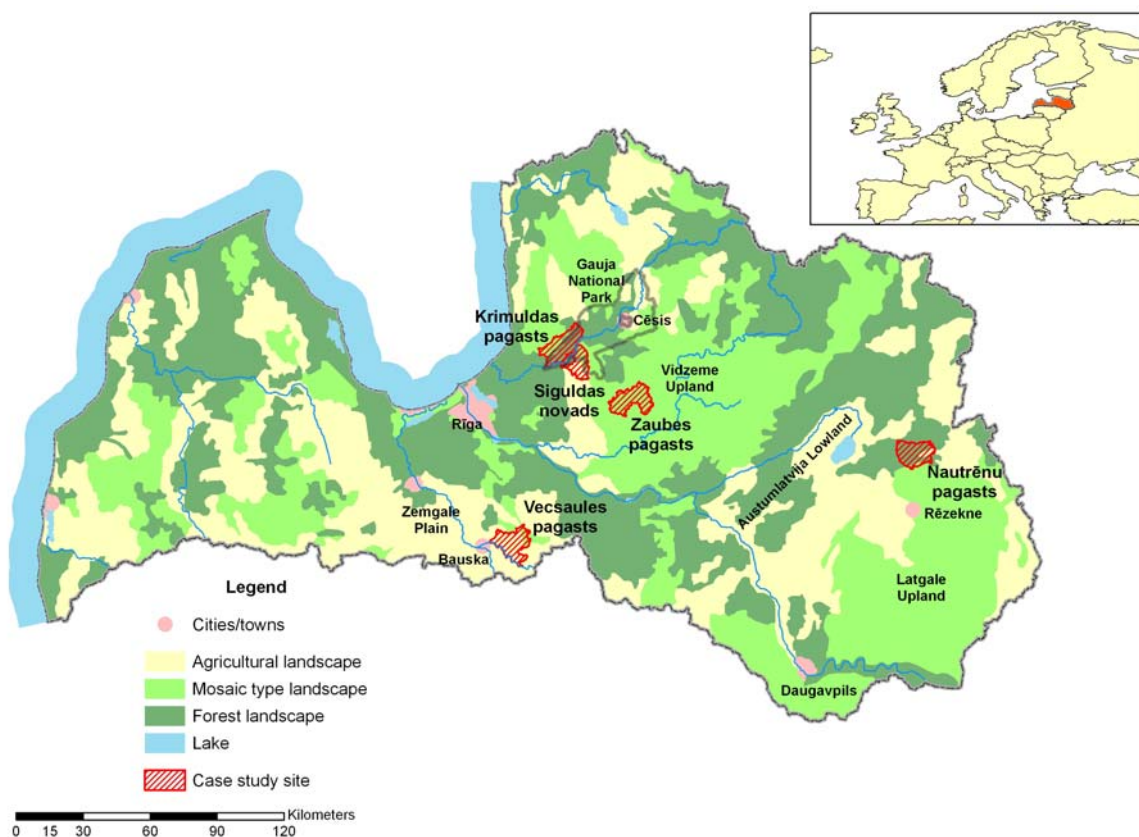


Fig 1. Location of case study sites represent some of the main landscape characters and degrees of marginality of Latvia (in terms of farming activity, remoteness from larger towns and transport connections): Vecsaules pagasts (Zemgale Region) – flat, fertile, large-scale plains, not marginal; Nautrēnu pagasts (Latgale Region) – hilly, less fertile areas and the most marginal sample due to distance from the centre of the country as well as agricultural conditions and Zaubes pagasts, Krimuldas pagasts and Siguldas novads (Vidzeme Region) – hilly, less fertile areas with a moderate degree of marginality.

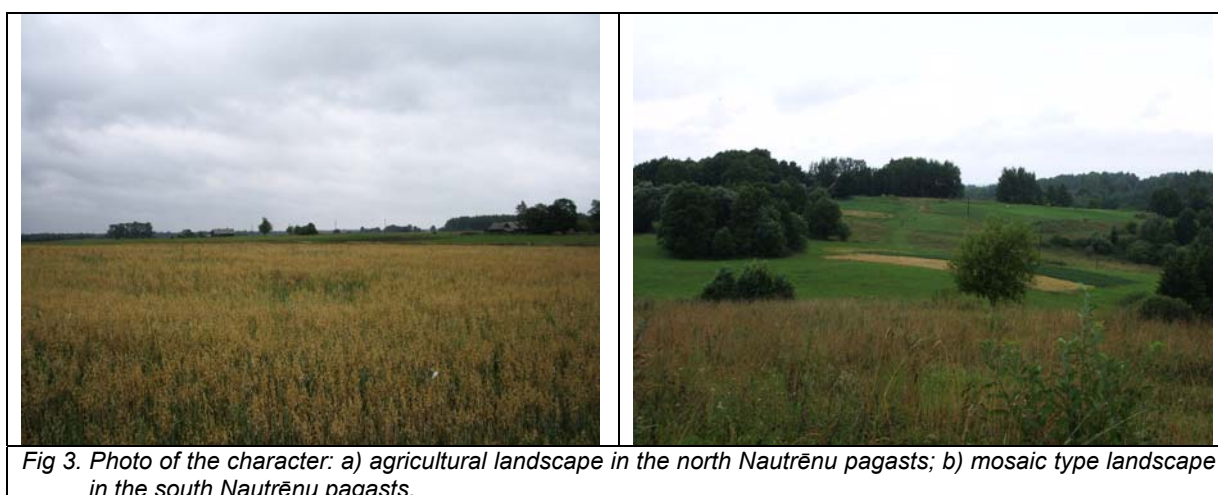
Vecsaules pagasts (figure 1) is situated in the central southern part of Latvia in the flat and fertile Zemgale Plain. Due to the flat relief the area is dominated by large-scale intensive agricultural lands with small areas of forest (figure 2), although in the north-eastern part there are some farms with poorer soils and smaller fields (figure 6b). 80% of the agricultural land is arable (table 2).





*Fig 2. Photo of the character: large-scale intensive agricultural landscape in the Vecsaules pagasts.*

Nautrēnu pagasts (figure 1) lies in the eastern region of Latgale, geographically close to Rzekne, one of the largest towns in Latvia. The northern section of the pagasts occupies part of the Eastern Latvian Lowland (figure 3a), while the southern section lies on part of the Latgale Upland with strongly undulating relief (figure 3b). Thus, the northern section is characterised by large-scale agricultural lands that alternate with forest, while the southern part with its moraine knolls has a smaller scale, typically mosaic type landscape (figure 7b). The total proportion of 78% agricultural land (table 2) is concentrated in the lowland section.



*Fig 3. Photo of the character: a) agricultural landscape in the north Nautrēnu pagasts; b) mosaic type landscape in the south Nautrēnu pagasts.*

Zaubes pagasts (figure 1) is situated in the central part of the Vidzeme Uplands. Although the pagasts is situated in the central part of the country, its geographical position is relatively marginal in relation to larger settlements and roads (Nikodemus et al. 2005b). The relief is dominated by moraine knolls (figure 4). Agricultural lands occupy only 34.4% of the pagasts'



*Fig 4. Photo of the character: mosaic type landscape in the Zaubes pagasts.*

territory (figure 8b) and only 43.6% of the agricultural land is meliorated (drained and improved during soviet times) (table 2).

Krimuldas pagasts and Siguldas novads (figure 1) are situated together in a geographically very accessible location close to Riga, the capital, and traversed by main roads. They are also located in the oldest national park of Latvia, Gauja National Park. These two rural municipalities are dominated by undulating moraine plains (figure 5). The southern part of Siguldas novads is occupied by moraine knolls, so the area also has large tracts of woodland with patches of agricultural land in between, forming a typical mosaic-type landscape (figure 9b). Krimuldas pagasts has some 43% of land in agriculture while Siguldas novads only has 37% (table 2).

#### **4. Methodology**

The methodology of the research is based on the analysis of two sets of data. Firstly, land use change analysis was carried out for each case study site, in particular the rate of land abandonment (there has been no corresponding gain in agricultural land, for example from forest clearance, over the same period anywhere in the case study areas), with data from maps from different periods using ArcGIS software. Maps dating from the 1920-1930s, and orthophotos from the turn of the 20<sup>th</sup>/21<sup>st</sup> centuries were compared to see how the landscape has changed over the whole period. The most recent changes in land use were obtained by field research, mapping and checking the current pattern of unused agricultural lands.

Secondly, to ascertain how farmers use the land, information about farmers' applications for all pagasts EU SAP in 2006 and for EU LFAP eligible pagasts also information on LFAP and SAP for year 2007 was obtained from the Rural Support Service of Latvia. The initial assumption was that if the owner of agricultural land had not applied for the payment, then the land was probably not being actively used for agriculture by the owner themselves. This could be for a variety of reasons, none of which could be found in the data, however. Each application is related to a field block within a land ownership unit which has a cadastre number. Some farms are also made up of separate parcels each with a cadastral number. In either case, therefore, it is





Fig 5. Photo of the character: undulating plains agricultural landscape in the Krimuldas pagasts.

possible to relate each application to a specific field block and to map the percentage of the blocks covered by each SAP or LFAP application.

The data for applications were split into five groups depending on the proportion of the field block covered by an application (0%, 1-49%, 50-74%, 75-99% and 100%) and approved by the Rural Support Service. 0% means that the owner of a field block has not received any SAP for that parcel, but 100% means that the whole area of the field block was covered by a SAP payment. The data of farmers' approved applications for the SAP potentially, therefore, shows very well which land is still used for agriculture, and which may have been abandoned. In order to be more accurate, the data from the Rural Support Service was followed by field work to ascertain how accurate the data was and which areas with no SAP applications also comprised abandoned land and in what percentage. The data from both sources are presented in the maps accompanying each case study analysis.

As well as the areas of abandonment, geo-referenced data on agricultural land quality value was available from the State Land Service on paper maps. This is based on a combination of factors such as soil quality (type and texture) and fertility, topography, field size and shape and accessibility, expressed at a scale of 1:10,000. Maps showing three land quality values of high, medium and low were drawn up for comparison purposes for each study area in order to express the range within it. It was done by taking the local range from the complete scale and dividing it into three equal sections, so that the different ranges of each study area could be compared more easily (figures 6c, 7c, 8c, 9c). These values are for today's conditions and therefore include the improved values following land amelioration in the past. The assumption is that the land with lowest quality value will be the most likely to be abandoned.

## 5. Results

The results are presented for each case study area in turn.

Vecsaules pagasts which is situated in the fertile lowlands of Zemgale, has seen a degree of land abandonment and re-colonisation of forest in last 80 or so years of the 20<sup>th</sup> century (figure

6a, b) and also, in soviet times, there was extensive amelioration. In most of the area the majority of the landowners use the SAP (figure 6d), except in the north-eastern section with poorer soils (figure 6c) and smaller fields where fewer farmers have applied for it.

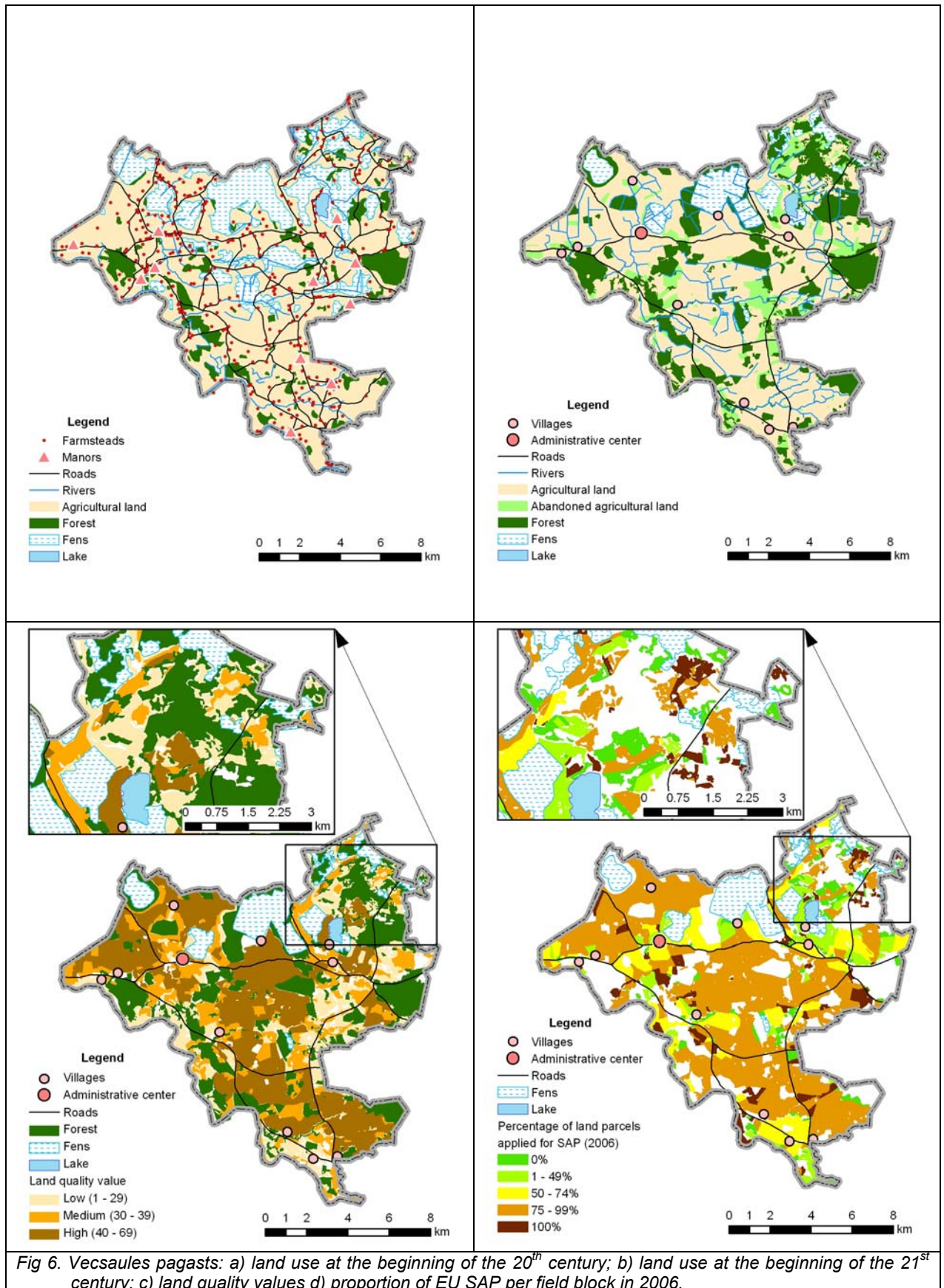


Fig 6. Vecsaules pagasts: a) land use at the beginning of the 20<sup>th</sup> century; b) land use at the beginning of the 21<sup>st</sup> century; c) land quality values d) proportion of EU SAP per field block in 2006.



The places where the largest amount of soviet amelioration took place have higher land quality values and the proportion under SAP is also highest. The amount of land abandonment therefore appears to be primarily associated with poor soils, while the higher uptake of SAP in the better soils suggests that land abandonment is no longer a problem in the fertile areas but will continue, elsewhere.

In Nautrēnu pagasts, which is situated in the Eastern Latvian Lowland, the same situation can be observed. From the early 20<sup>th</sup> century until 2000 significant abandonment took place, especially in the southern hilly section (figure 7a, b). SAP applications are concentrated in the flatter and more fertile ameliorated plains in the central part of the study area where agricultural land is more intensively used and also with larger concentration of roads and settlements. In the marginal, hilly areas SAP applications are significantly fewer, suggesting a continuing process of abandonment (figure 7d). The map showing land quality values (figure 7c) confirms this association. In 2007 (figure 7e) farmers actively managed the same areas as in 2006. Comparing the 2007 SAP with the 2007 LFAP (figure 7f) in the Nautrēnu pagasts it is noticeable that most farmers use the European support schemes for maintaining the open landscape and not for intensive agriculture.

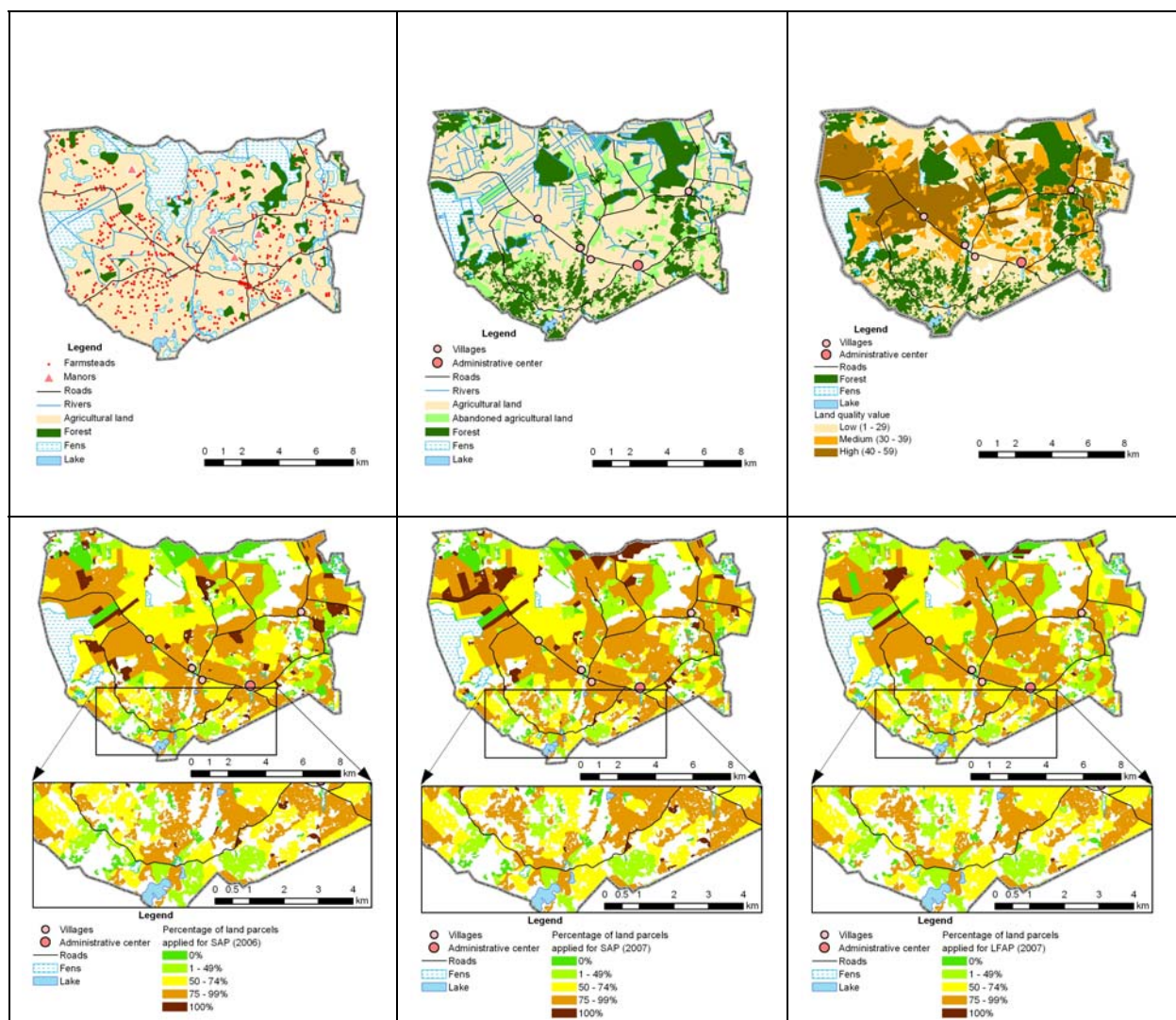


Fig 7. Nautrēnu pagasts: a) land use at the beginning of the 20<sup>th</sup> century; b) land use at the beginning of the 21<sup>st</sup> century; c) land quality values; d) proportion of EU SAP per field block in 2006; e) proportion of EU SAP per field block in 2007; f) proportion of EU LFAP per field block in 2007.

In Zaubes pagasts very significant areas were abandoned up to 2000 (figure 8a, b). This study area is generally more homogeneous in terms of relief and landscape pattern but has some larger-scale areas which were drained and ameliorated in soviet times (figure 8c). SAP applications are largely confined to the field blocks situated in these drained areas (figure 8d) or in the vicinity of large farm complexes which were the centres of the collective farms in soviet

times. In the mosaic-type landscape which accounts for most of the agricultural land there are dominating few SAP applications, so this area, which suffered the most abandonment, continues to be abandoned. The map of land quality values also clearly shows a distinct pattern of large more valuable areas interspersed with lots of small, less valuable land. Regarding application of LFAP in 2007 (figure 8e; 8f) a similar situation to that in Nautrēnu pagasts can be observed (figure 7e; 7f).

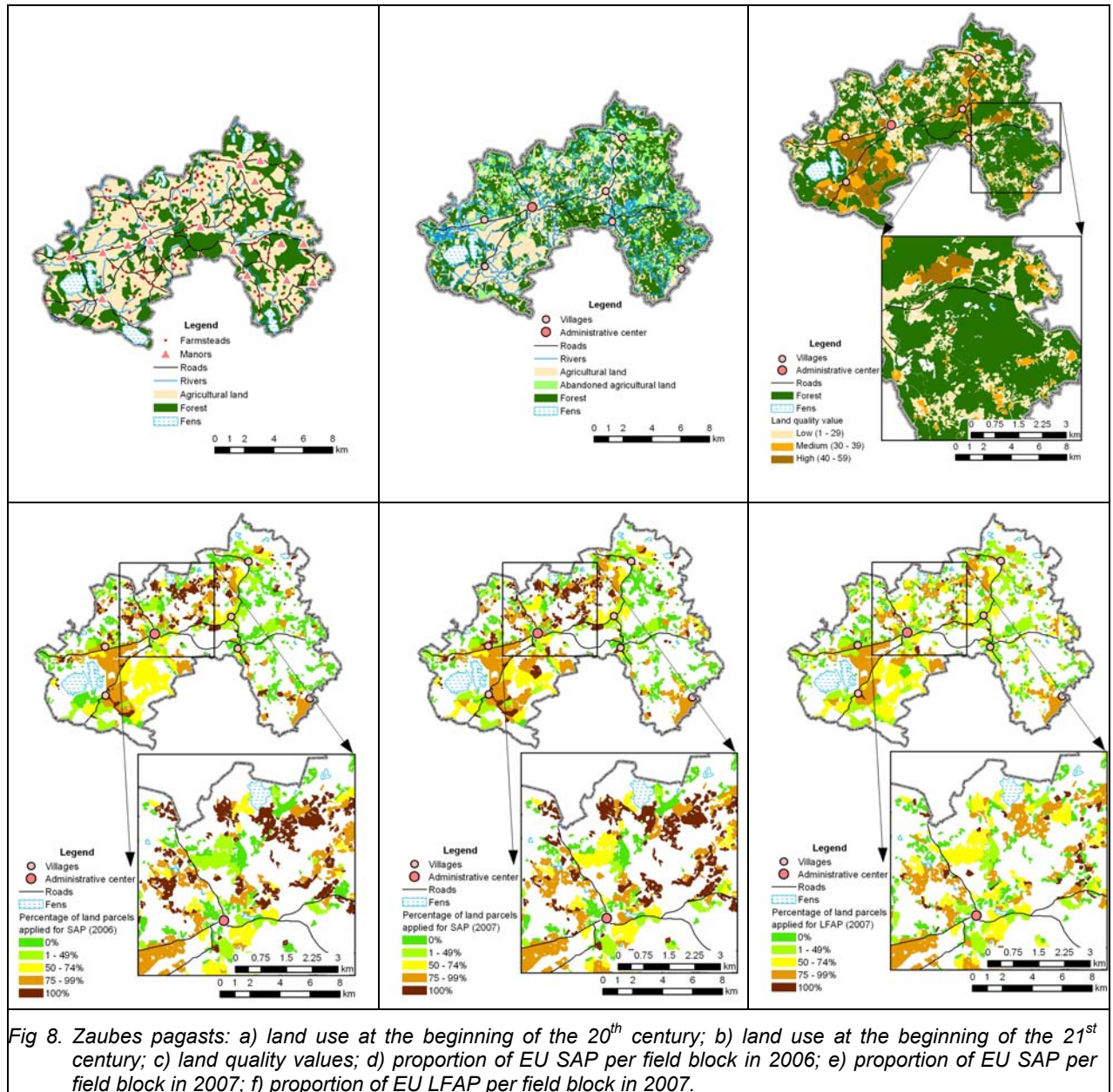


Fig 8. Zaubes pagasts: a) land use at the beginning of the 20<sup>th</sup> century; b) land use at the beginning of the 21<sup>st</sup> century; c) land quality values; d) proportion of EU SAP per field block in 2006; e) proportion of EU SAP per field block in 2007; f) proportion of EU LFAP per field block in 2007.

The pattern in Krimulda and Sigulda is somewhat different from the previous examples. Despite the mix of conditions and land quality values being similar in both areas (figure 9a, b, c), there are significant differences in the pattern of SAP (figure 9d) between them. Both areas underwent some amelioration in soviet times and both have suffered land abandonment in the past. However, whereas the landowners in Krimuldas pagasts have a high payment rate for SAP, those in Siguldas novads do not. This suggests that abandonment is continuing in Sigulda while it has slowed or stopped in Krimulda.



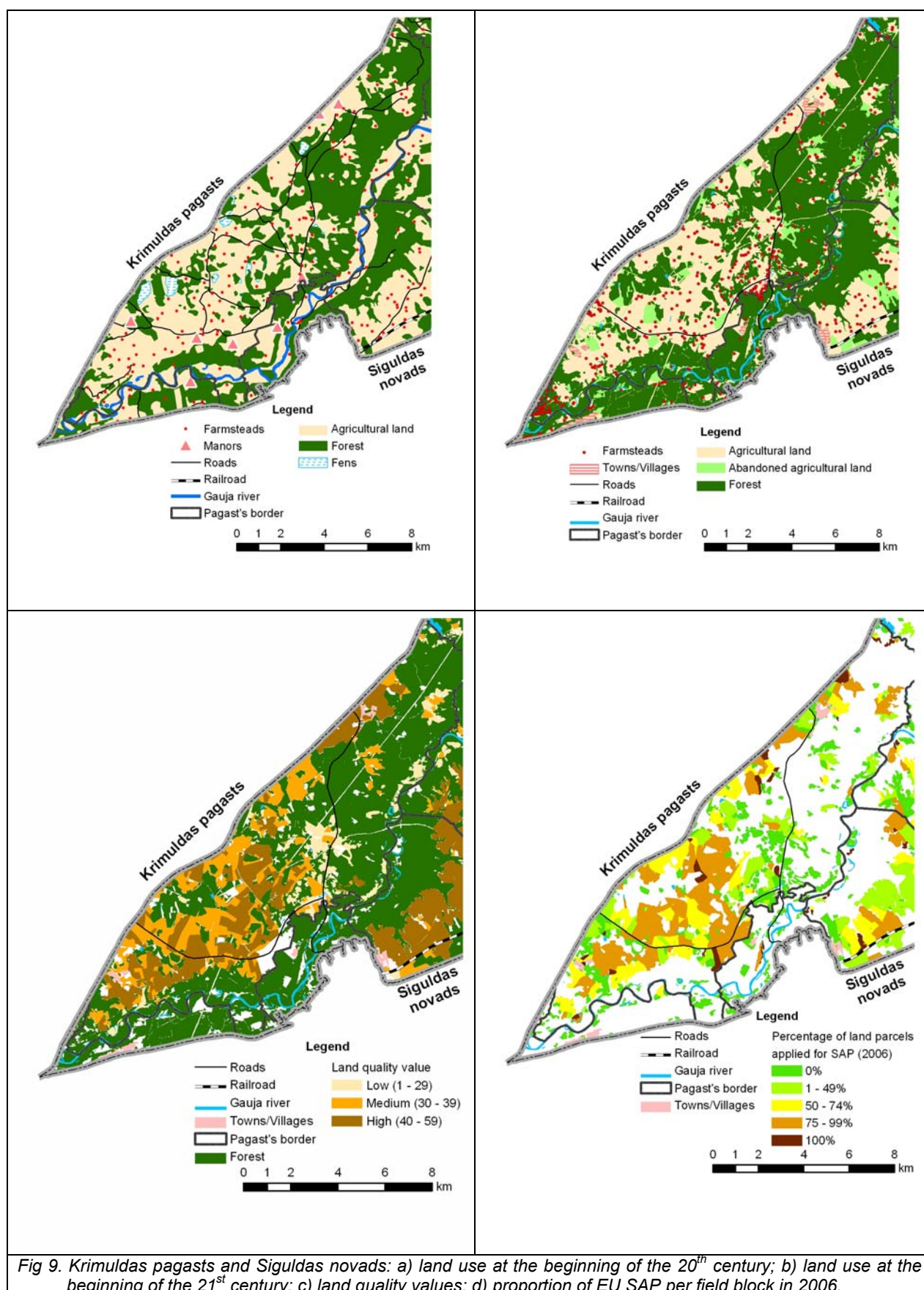


Fig 9. Krimuldas pagasts and Siguldas novads: a) land use at the beginning of the 20<sup>th</sup> century; b) land use at the beginning of the 21<sup>st</sup> century; c) land quality values; d) proportion of EU SAP per field block in 2006.

## 6. Discussion

In 2006 there were 133,044 farms in Latvia. 51,935 of these were producing agricultural products for the market, but the EU SAP was received by 77,559 farms (Pilvere 2008). The analysis of the usage of the SAP in agricultural areas in Latvia show several

interconnections. At first sight, there appears to be a simple correlation between the level of uptake of support payments and the agricultural land quality values. However, the picture is more complex, e.g. in Krimuldas pagasts and Siguldas novads where despite the similarity in land quality there is a distinct difference between the high level payments of SAP in Krimuldas pagasts and the much lower level in Siguldas novads. Clearly, there must be some other mechanism at work here.

Despite the fact that the farmers in more fertile areas receive less EU support in total, because they are not eligible for LFAP on top of the SAP (table 1), these agricultural lands tend to be cultivated more intensively (the site visits showed a lot of arable crops, for example) and the SAP uptake is high. One explanation for this is that the EU subsidies are partly compensated and boosted by the availability of national subsidies, for example, area payments for arable crops (€64.83 per ha in 2004). This payment encourages landowners to develop or maintain large fields in arable production. As a result of economic factors and the fertility of the soils, the Zemgale lowlands, typified by Vecsaules pagasts, has become an area with an open landscape of homogeneous agricultural land (figure 6b). A similar situation can be found in the northern section of Nautrēnu pagasts in the Eastern Latvian Lowland (figure 7b).

Another aspect to take into account, especially in Zemgale, is the number of farms being bought by foreign farmers who are keen to maximise the productivity and economic performance of their farms. It can be speculated that it is not the land quality as such that has the most direct influence but the motivations and dynamism of the farmers. If, for example, the most active farmers are to be found where agriculture has the greatest chance of economic success, then it is likely that these people are also keen to obtain funding and support from wherever they can. They may be the most educated, they may be younger and they may also be foreigners with good experience of the agricultural support system from, for example, Denmark.

This difference in motivation would seem most likely to be a feature of individuals, with some farmers in the poorer areas also being younger, more dynamic and keen on developing a viable businesses and therefore more likely to take up the SAP. While the SAP payments are lower in the poorer areas it can be theorised that those who receive it are potentially more dynamic and possibly younger, although more research would be needed to establish this. A study in Cesis region in Latvia (Grinfelde and Mathijs 2004) looking at farmers' behaviour in respect of land abandonment found that short and long-term farm management decisions were affected by several factors: farm income, land price, social capital, personal characteristics and the physical conditions of the land. The farmers themselves cited low profitability and low land quality as the main reasons for land abandonment.

One possible explanation for the dichotomy in high and low payment rates between areas is the way in which farm types have tended to become polarised in Eastern Europe, into large agribusiness ventures at one end of a scale and small subsistence farms at the other, with very little in between. The effect of this on the sector has been illustrated vividly for Bulgaria (Kostov and Lingard 2002) where much of the produce from the small-scale farmers does not reach the market, with consequences of unpredictability in the agricultural sector and problems of viability and inefficiency of the farms themselves. In Latvia in 2002 it was the case that 67% of all farms produced no output for sale and only some 20% sold more than 50% of their output (the rest being consumed on the farm) (Vīra and Narnicka 2003) showing that the situation is similar to Bulgaria.

A second factor that may account for the differences between Krimuldas pagasts and Siguldas novads is a result of the character of the two communities, where peer pressure and traditions among the farmers is having an effect – in one place to increase the SAP uptake, in the other to prevent it. Once again, there is no hard evidence that this is the case but a study in Poland found that in two different villages in the same area the communities had adopted very different strategies, one going for agricultural development and the other focussing on tourism (Skrowronek et al. 2005). The situation in Siguldas novads is interesting because even the good quality meliorated land is becoming abandoned, which is not the case in the other cases.

Given that semi-subsistence farming is considered to be an important social safety net in rural Latvia (Vīra and Narnicka 2003) it seems strange that, for instance, in 2006, 42.7% of farmers (Pilvere 2008) had not applied to take up the SAP since it is designed in part to provide a steady

income and it must represent a useful additional cash income, since presumably, the 67% of farmers who do not sell any of their production must suffer from a shortage of liquidity unless they have other sources of income such as jobs outside the farm. Also, if they need to spend money on equipment and fuel in order to start cultivation or cropping on land already abandoned or close to this state, they will need to be able to calculate if the costs of such work will be covered by the SAP and leave some income over besides, otherwise the work is not attractive (in fact, since SAP is not paid on land already abandoned, farmers need to cut it and remove any bushes at least one year before being able to include the land in the SAP for the following year). The fixed rate of SAP at €26.4 per ha may not be sufficient to motivate some farmers. Furthermore, non-resident landowners may not be motivated to apply and older people may have practical difficulties in applying; once again, more research is needed on motivational factors.

Clearly, four years from the start of a programme can be considered a short time to draw fixed conclusions but policy makers often need to amend or fine tune instruments using data from relatively short periods. However, from the data presented in this study it is clear that at present the SAP partly guarantees the preservation of the mosaic-type landscape in Latvia's uplands, as shown for both the Latgale Uplands, exemplified by Nautrēnu pagasts and Vidzeme Uplands, exemplified by Zaubes pagasts. Nevertheless, SAP is currently insufficient for maintenance of the open landscape if the farmers do not have enough income from direct agricultural activities as shown from the application of SAP in 2007 and 2008 in Zaube and Nautrēnu (table 3), which show a sharp decline. Upland areas continue to experience abandonment and overgrowth of agricultural lands and transformation of the mosaic-type landscape, which is so characteristic of these areas (Bell et al. 2007). From the point of view of local inhabitants such a process is diminishing aesthetic value of the landscape as well as threatens the traditional countryside that is being a part of the sense of national identity (Penēze 2009). This process is likely to lead to the deterioration of the biological diversity of the area, as one of the prerequisites of biological diversity is the existence of grassland and pasture land (Bergmanis 2004, Donald et al. 2002, Keišs 2005). The SAP is also having little effect so far in the preservation of the Gauja valley's terraced and flooded meadows in Krimuldas pagasts and Siguldas novads, as the fragmented meadows are becoming overgrown by pine (*Pinus silvestris*) and scrub, as observed in the field work for this project.

Rural municipality	2004	2005	2006	2007	2008
Vecsaules	272	264	243	243	225
Nautrēnu	435	469	480	456	413
Zaubes	124	159	173	160	152
Krimuldas	142	148	159	148	140
Siguldas	183	201	202	209	183

Tab 3. Amount of farmers and other landowners applications for single area payment in case study areas (Rural Support service data 2008).

It will be important therefore for agricultural and environmental policy-makers to try to find out more about the causes of the low level of uptake of the SAP and LFAP, which is intended to be paid to all farmers. Focussing on farmers and their beliefs and other motivating or de-motivating factors is likely to be important. The case for an integrated approach to rural development has been made elsewhere and seems to be relevant here too, given that farm incomes, cultural landscape management and biodiversity conservation are clearly interlinked. In Estonia this need was identified as far back as 1997 and the case is probably more true today (Unwin 1997). Recent suggestions from Spain that farmer's knowledge as a source of information on cultural landscapes is important for rural landscape conservation and management also deserve further exploration (Calvio Iglesias et al. 2006). This use of local knowledge may be important also in trying to bridge the gap between centrally defined policies which seem to be too crude and not well-targeted if they are missing the most vulnerable farmers (Pinto-Correia et al. 2006). Since Krimuldas pagasts and Siguldas novads both lie in the Gauja National Park the issue of cultural landscape management is particularly important. The way that landscape as an expression of Latvian cultural identity was used in soviet times provides an interesting context and could be further explored (Schwartz 2006, Bell et al. 2008).

## 7. Conclusions

This paper posed a series of linked research questions.

Firstly, to what extent are the SAP and LFAP having a positive effect on the landscape pattern and structure which is a key aspect of the cultural and ecological (and therefore environmental) quality? The straight answer to this is that they are having a certain positive effect so far but not to the extent that was expected.

Is the level of land abandonment increasing, decreasing or staying the same? The answer to this is that in places the pace of abandonment has been slowed or halted but not for many of the areas which are in most need of this, primarily the most typical and valuable cultural landscapes (Bell et al. 2007) which are also good for biodiversity.

Are the payments going to those farmers who manage the most valuable landscapes? Clearly not, most of the payments are going to larger farmers in good agricultural areas but not to those in the landscapes most at risk.

What obstacles prevent the benefits from being achieved? This question cannot be comprehensively answered by this research, which has served mainly to uncover the pattern, not the causes of the problem of continued land abandonment. The payments are not reaching the semi-subsistence farmers living in the most marginalised areas. The reasons seem to be connected to a number of factors of which economics and land quality are only two. More research is needed to find out more about the push and pull factors affecting farmer's decision making.

When analysing the historical development of the landscape structure it can be assumed that, despite the use of the EU and national subsidies in the maintenance of the landscape and development of agriculture, the landscape structure of Latvia continues to experience the same process of transformation it did in the 1990s. The EU payments can curb these processes in the places, but not stop them altogether. At present the mosaic-type cultural landscape, so typical of Latvia, is mostly endangered in undulating uplands and river valleys such as the Gauja. The ability of Latvia to meet its biodiversity conservation obligations as well the European Landscape Convention will depend in part on the success of the range of agricultural and other agri-environment payments in the years to come.

## Acknowledgments

The authors of the article express their gratitude to the Rural Support Service of Latvia for permission to use the data of the use of the EU single area payments in Latvia. The work was financially supported by the Science Council of Latvia grant.

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